
Importance of defining experimental conditions in a mouse excisional wound model.

Journal: Wound Repair Regen

Publication Year: 2015

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PubMed link: 25703258

Public Summary:

The murine dorsum dermal excisional wound model has been widely utilized with or without splint application. However, variations in experimental methods create challenges for direct comparison of results provided in the literature and for design of new wound healing studies. Here, we investigated the effects of wound location and size, number of wounds, type of adhesive used for splint fixation on wound healing using splinted or unsplinted dorsum excisional full thickness wound models. One or two 6- or 8-mm full thickness wounds were made with or without splinting in genetically diabetic but heterozygous mice (Dock7(m) + / + Lepr(db)). Two different adhesives: tissue adhesive and an over the counter cyanoacrylate adhesive (OTCA) "Krazy glue" were used to fix splints. Wound contraction, wound closure, and histopathological parameters including reepithelialization, collagen deposition and inflammation were compared between groups. No significant effect of wound number (1 vs. 2), side (left vs. right and cranial vs. caudal) or size on wound healing was observed. The OTCA group had a significantly higher splint success compared to the tissue adhesive group that resulted in significantly higher reepithelialization and collagen deposition in the OTCA group. Understanding the outcomes and effects of the variables will help investigators choose appropriate experimental conditions for the study purpose and interpret data.

Scientific Abstract:

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